




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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,757	09/25/2001	Wolfgang Dultz	2345/154	2150
26646	7590	10/06/2004	EXAMINER	
KENYON & KENYON ONE BROADWAY NEW YORK, NY 10004			WARREN, MATTHEW E	
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/830,757	DULTZ ET AL.	
	Examiner	Art Unit	
	Matthew E Warren	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13,14,16-21 and 23-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16,17,23 and 24 is/are allowed.
- 6) ☒ Claim(s) 13,14,18-21,25 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the Amendment filed on July 8, 2004.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13, 14, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Funfschilling et al. (US 6,606,134 B1) in view of Shashidhar et al. (US 5,293,261).

In re claims 13 and 20, Funfschilling et al. discloses (col. 4, lines 8-14) an optical liquid crystal modulator and a method of operating the modulator, comprising a ferroelectric liquid crystal which has a DHF mode. Funfschilling shows all of the elements of the claim except the operating range of the electric field. Shashidhar et al. discloses (col. 4, lines 51-63) a liquid crystal device which exhibits an operating range of an electric field of up to 3×10^5 V/cm (equal to 30 V/ μ m) which is more than the electric field minimum listed in the claims. Such a field strength is required to induce fast switching of the ferroelectric (abstract). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify liquid crystal ferroelectric of Funfschilling by increasing the electric field as taught by Shashidhar to induce faster switching of the ferroelectric material.

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In re claims 14 and 21, Funfschilling et al. discloses (col. 4, lines 8-14) an optical liquid crystal modulator and a method of operating the modulator wherein the LC modulator is configured as a $\lambda/2$ magnification plate (col. 5, lines 52-64) and produces a tilt angle (or switching angle) of + 22.5 degrees (col. 5, lines 43-49).

Claims 18, 19, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Funfschilling et al. (US 6,606,134 B1) in view of Shashidhar et al. (US 5,293,261) as applied to claims 13 and 20 above, and further in view of Sharp et al. (US 5,627,666).

In re claims 18, 19, 25 and 26 Funfschilling and Shashidhar show all of the elements of the claims except the specific driving frequency. Sharp et al. discloses (col. 6, lines 10-32) a liquid crystal modulator and a method of operating the modulator in which a driving voltage is applied at a driving frequency over 50 kHz to vary the LC tilt angle. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the liquid crystal modulator of Funfschilling and Shashidhar by driving the voltage at a frequency over 50kHz as taught by Sharp to apply the necessary electric field for change of the tilt angle.

Allowable Subject Matter

Claims 16, 17, 23, 24 are allowed.

The following is an examiner's statement of reasons for allowance: the prior art references, alone or in combination, do not show an optical liquid crystal modulator

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comprising or the method for operating the liquid crystal modulator comprising at least one ferroelectric liquid crystal, which has a DHF mode, exhibits an operating range of an electric field of more than $20 \text{ V}/\mu\text{m}$, having the desired helical pitch between 0.1 to $0.5 \mu\text{m}$.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

Applicant's arguments filed with respect to claims 13 and 20 have been fully considered but they are not persuasive. The applicant primarily argues that the combined references do not show all of the elements of the claims and that the references are not combinable. Specifically, the applicant asserts that Funfschilling and Shashidhar do not show that the ferroelectric liquid crystal exhibits an operating range more than $20 \text{ V}/\mu\text{m}$. As stated in the rejection above Funfschilling shows a ferroelectric liquid crystal operating in a DHF mode and Shashidhar clearly cures the deficiencies of Funfschilling by teaching that a ferroelectric liquid crystal operates at more than $20 \text{ V}/\mu\text{m}$ (actually between 10 and $30 \text{ V}/\mu\text{m}$). Although Shashidhar does not disclose the liquid crystal operating in a DHF mode, Shashidhar is analogous to Funfschilling because both references pertain to liquid crystal devices. Funfschilling was only lacking in teaching the specified operating voltage of the device, but it is well known in the art

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that a liquid crystal device would have a voltage applied to it in order to operate.

Shashidhar is especially pertinent because the electric field is applied to a ferroelectric material, the same material disclosed in Funfschilling. The cited references are analogous and combinable and the secondary reference of Shashidhar provides motivation for using such an electric field. Therefore, the rejection is proper and this action is made final.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

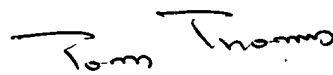
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew E Warren whose telephone number is (571) 272-1737. The examiner can normally be reached on Mon-Thur and alternating Fri 9:00-5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MEW
MEW
October 1, 2004


TOM THOMAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800